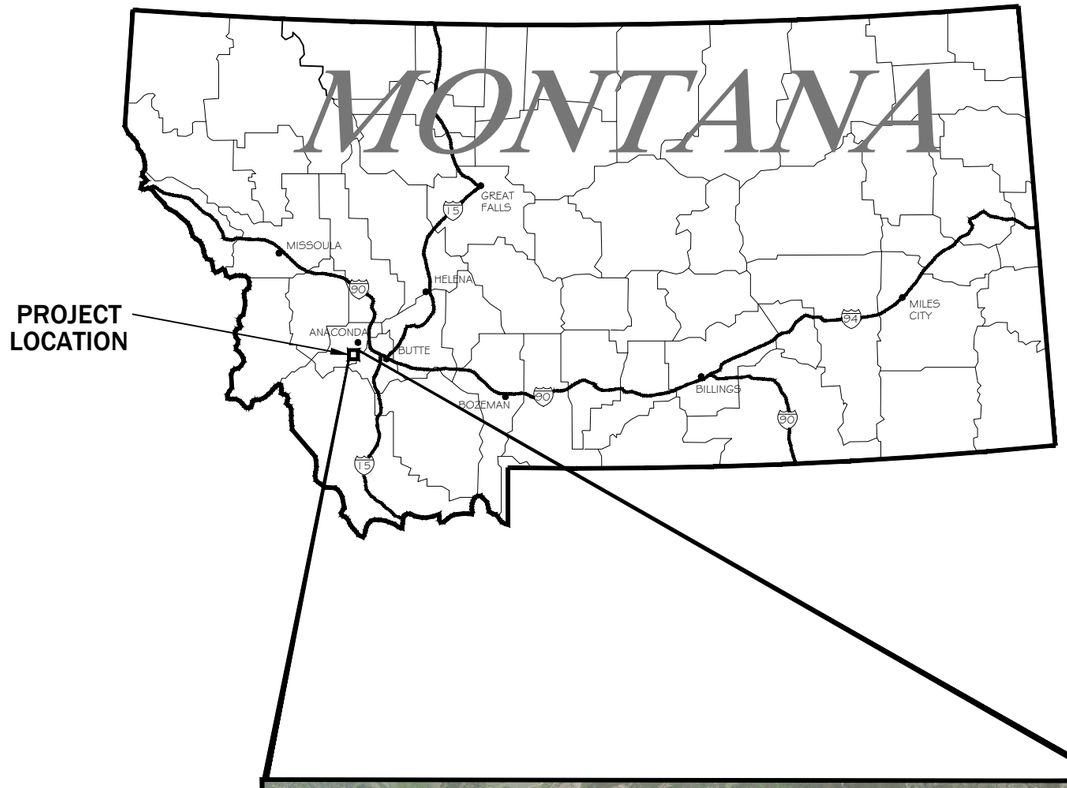
APPROVED
FOR CONSTRUCTION



SITE VICINITY MAP
SOURCE: USGS

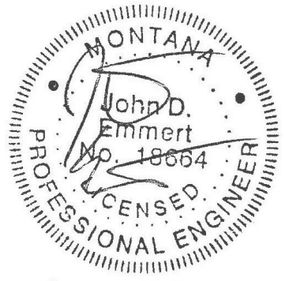
MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS

FRENCH CREEK FISH BARRIER MOUNT HAGGIN WILDLIFE MANAGEMENT AREA

PREPARED BY

PIONEER TECHNICAL SERVICES, INC.
DATE: 08/01/18

SHEET INDEX



SHEET
1

ABBREVIATIONS

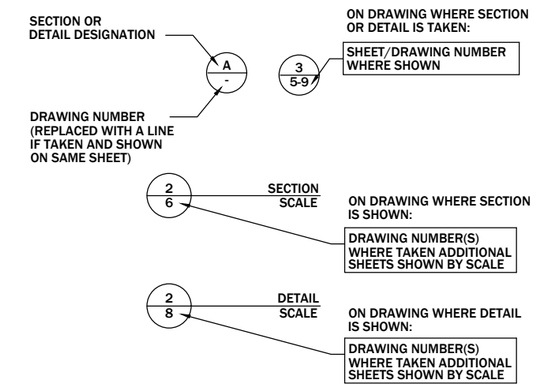
APPROVED
FOR CONSTRUCTION

AB	ANCHOR BOLT, ABOVE
ABDN	ABANDON
AC	ASPHALTIC CONCRETE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
AGGR	AGGREGATE
AHR	ANCHOR
AJ	ADJUSTABLE
APPROX	APPROXIMATE
APVD	APPROVED
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
@	AT
BETW	BETWEEN
BF	BLIND FLANGE, BOTTOM FACE
BG	BELOW GRADE
BLDG	BUILDING
BLK	BLOCK
BM	BEAM, BENCHMARK
BOT	BOTTOM
BRG	BEARING
BRKR	BREAKER
BVC	BEGINNING OF VERTICAL CURVE
C	CONDUIT, CASEMENT
C TO C	CENTER TO CENTER
CAB	CABINET
CB	CATCH BASIN, CIRCUIT BREAKER
CC	CONTROL CABLE
CCL	COMPACTED CLAY LAYER
CCP	CENTRAL CONTROL PANEL
CCS	CENTRAL CONTROL SYSTEM
CDN	COMPOSITE DRAINAGE NET
CIP	CAST IN PLACE
CIP	CULVERT INLET PROTECTION
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLSF	CONTROLLED LOW STRENGTH FILL
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT, CARBON MONOXIDE
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUED, CONTINUATION
COORD	COORDINATE
CP	CONTROL POINT
CRS	COLD ROLLED STEEL
CRS	CONSTRUCTION ROAD STABILIZATION
CTR	CENTER
CTRD	CENTERED
CU	CUBIC
CU FT	CUBIC FOOT
CU IN	CUBIC INCH
CY, CU YD	CUBIC YARD
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIR	DIRECTION
DISCH	DISCHARGE
DWG	DRAWING
△	DELTA
E	EAST, EMPTY
EA	EACH
EF	EACH FACE
EL	ELEVATION
ELB	ELBOW
ELC	ELECTRICAL LOAD CENTER
ELEC	ELECTRIC, ELECTRICAL
ENGR	ENGINEER
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
ESC	EROSION AND SEDIMENT CONTROL
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EXP	EXPANSION, EXPOSED
EXP AB	EXPANSION ANCHOR BOLT
EXP JT	EXPANSION JOINT
EXST, EXIST	EXISTING
EXT	EXTERIOR
FC	FLEXIBLE CONDUIT/ CONNECTOR
FCA	FLANGED COUPLING ADAPTER
FDN	FOUNDATION
FG	FINISH GRADE
FHY	FIRE HYDRANT
FIG	FIGURE
FL	FLOW LINE
FLG	FLANGE
FL	FLOOR
FLEX	FLEXIBLE
FNSH	FINISH
FOB	FLAT ON BOTTOM
FP	FIELD PANEL
FPL	FROST PROTECTION LAYER
FPM	FEET PER MINUTE
FT	FOOT OR FEET
FWD	FORWARD
G, GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GROOVED COUPLING
GCL	GEOSYNTHETIC CLAY LINER
GVL	GRAVEL
HDPE	HIGH DENSITY POLYETHYLENE
HH	HANDHOLE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HWL	HIGH WATER LEVEL
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IN	INCH(ES)
INVT	INVERT
IP	INLET PROTECTION
IRRIG	IRRIGATION
JB	JUNCTION BOX
JCT	JUNCTION
JT	JOINT
L	ANGLE, LENGTH
LB(S)	POUND(S)
LDS	LEAK DETECTION SYSTEM
LF	LINEAR FEET
LG	LONG
LONG	LONGITUDINAL
LP	LIGHT POLE
LPT	LOW POINT
LR	LONG RADIUS
LT	LEFT
LTG, LTS	LIGHTS OR LIGHTING
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFD	MANUFACTURED
MFR	MANUFACTURER
MH	MANHOLE, MOUNTING HEIGHT
MIN	MINIMUM
MISC	MISCELLANEOUS
MS	MANUFACTURER'S STANDARD
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MU	MULCHING
MWS	MAXIMUM WATER SURFACE
N	NORTH
NA	NOT APPLICABLE
NEUT	NEUTRAL
NG	NATURAL GAS
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NO., #	NUMBER
NOM	NOMINAL
N-S	NORTH - SOUTH
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OVERFLOW
O.F.	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
OZ	OUNCE
PC	POINT OF CURVE
PCF	POUNDS PER CUBIC FOOT
PI	POINT OF INTERSECTION
PJF	PREMOULDED JOINT FILLER
PL	PROPERTY LINE
PLYWD	PLYWOOD
PMP	PUMP
PNL	PANEL
POE	POINT OF ENDING
PP	POWER POLE
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRCST	PRECAST
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY
PT	PRESSURE TREATED
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
R OR RAD	RADIUS
RC	REINFORCED CONCRETE
RDCR	REDUCER
REF	REFER OR REFERENCE
REINF	REINFORCED, REINFORCING, REINFORCE
REQD	REQUIRED
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
RPE	REINFORCED POLYETHYLENE
RST	REINFORCING STEEL
RT	RIGHT
RTN	RETURN
R/W	RIGHT OF WAY
S	SWITCH
SB	SEDIMENT BASIN
SCHED	SCHEDULE
SEC	SECONDARY
SED	SEDIMENTATION
SH	SHEET
SIM	SIMILAR
SPEC, SPECS	SPECIFICATIONS
SQ	SQUARE
SQ FT	SQUARE FOOT, FEET
SQ IN	SQUARE INCH
ST	STRAIGHT
STA	STATION
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE
T&B	TOP AND BOTTOM
TAN	TANGENT
TBC	TEMPORARY BYPASS CHANNEL
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPORARY, TEMPERATURE
THK	THICKNESS
THRU	THROUGH
TOC	TOP OF CONCRETE
TOS	TOP OF SLAB
TOW	TOP OF WALL
TP	TURNING POINT
TRANSV	TRANSVERSE
TX	TRANSFORMER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VC	VERTICAL CURVE
VERT	VERTICAL
VPC	POINT OF VERTICAL CURVATURE
VPI	POINT OF VERTICAL INTERSECTION
VPT	POINT OF VERTICAL TANGENT
W	WEST
W/	WITH

NOTES:

1. CONTACT ENGINEER FOR ABBREVIATIONS USED BUT NOT SHOWN ON THIS DRAWING.

LEGEND



GENERAL SITE

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS ARE FROM LIMITED SURVEY DATA. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NAD 83, MONTANA STATE PLANE COORDINATE SYSTEM, INTERNATIONAL FEET.
4. VERTICAL DATUM: N.A.V.D. 88, U.S. SURVEY FEET.
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
7. PROVIDE TEMPORARY FENCING AS NECESSARY TO MAINTAIN SECURITY AT ALL TIMES.
8. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE NOTED.
9. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
10. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED AND INSPECTED AS STATED IN THE APPROVED EROSION AND SEDIMENTATION PLAN APPROVED IN THE STORMWATER DISCHARGE PERMIT.
11. ALL CONTRACTORS AND SUBCONTRACTORS SHALL COMPLY WITH THE FIELD SAFETY INSTRUCTIONS APPROVED (FSI)FOR THIS SITE AT ALL TIMES.
12. EXISTING SITE DRAINAGE FLOW PATTERNS/DIRECTIONS SHALL BE MAINTAINED UNLESS OTHERWISE INDICATED ON THE PLANS.
13. CONSTRUCTION ACTIVITY BY OTHERS MAY IMPACT THE WORK CONTEMPLATED WITHIN THIS PACKAGE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A CONFLICT ARISES RELATING TO THE PROGRESS OF THE WORK. FINAL COORDINATION/RESOLUTION OF SUCH CONFLICTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTORS INVOLVED.
14. EXISTING FEATURES AND UTILITIES ARE SHOWN ON THE PLANS BASED UPON INFORMATION AVAILABLE AT THE TIME THE PLANS WERE PREPARED. SHOULD UNIDENTIFIED UTILITY OR SERVICE ELEMENTS BE ENCOUNTERED, NOTIFY THE ENGINEER AND THE APPROPRIATE UTILITY OWNER IMMEDIATELY.
15. ACCESS TO THE GENERAL SITE, AND TO SPECIFIC WORK AREAS SHALL BE LIMITED TO THE LOCATIONS SHOWN ON THE PLANS.
16. WATER FOR CONSTRUCTION ACTIVITIES SHALL BE OBTAINED BY THE CONTRACTOR AT THEIR SOLE EXPENSE. ANY AND ALL PERMITS REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

GENERAL NOTE:

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

REVISION:
DATE: BY: DESC:

DRAWN BY: JJJ
DESIGNED BY: JJJ
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE:
DATUM:
UNITS:
SOURCE: PIONEER

SCALE IN FEET
0

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
LEGEND AND
ABBREVIATIONS

PIONEER
TECHNICAL SERVICES, INC.
106 PRONGHORN TRAIL, SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8578

SHEET
2

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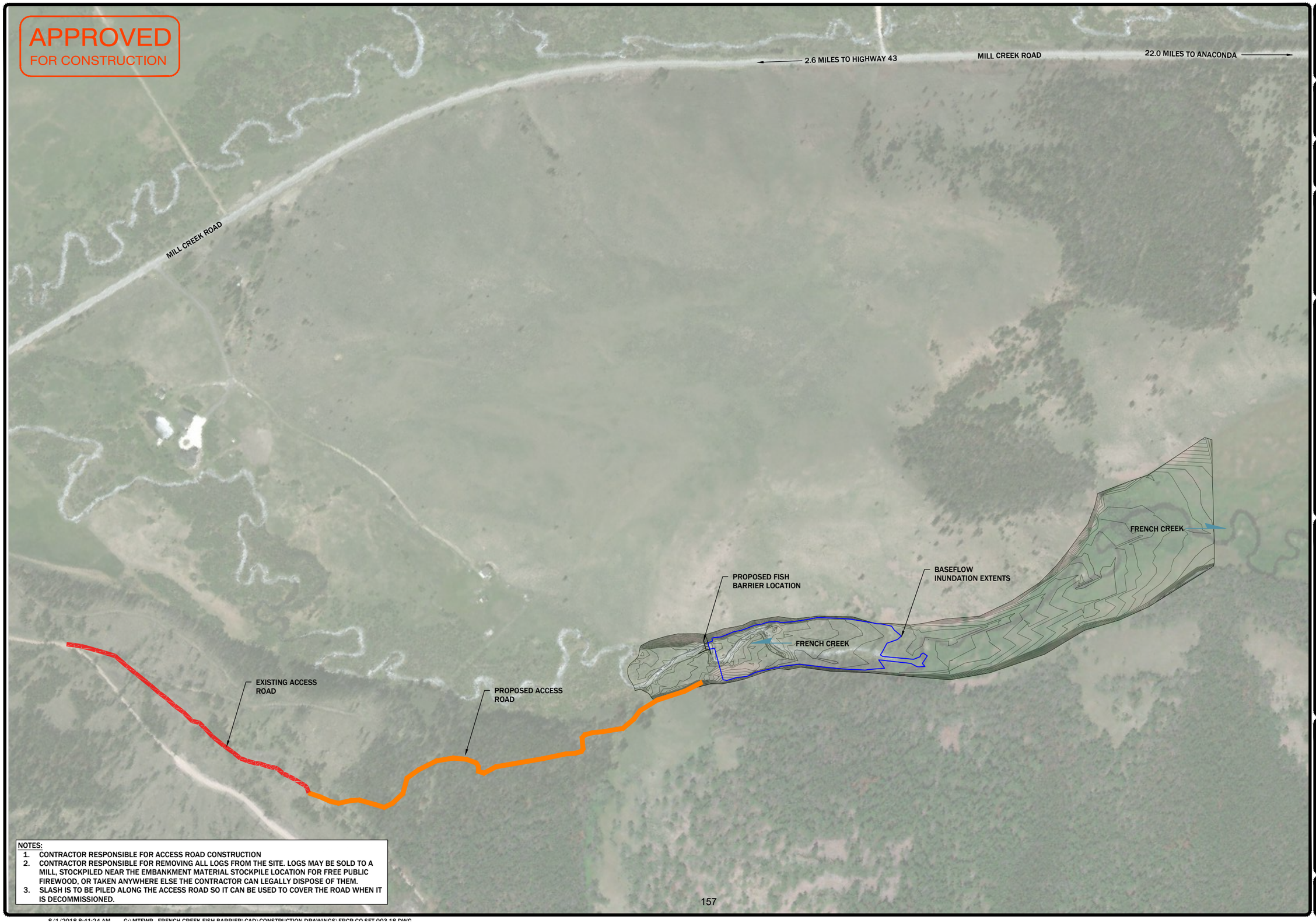
FOR CONSTRUCTION



NOTES:
1. CONTRACTOR RESPONSIBLE FOR ACCESS ROAD CONSTRUCTION
2. CONTRACTOR RESPONSIBLE FOR REMOVING ALL LOGS FROM THE SITE. LOGS MAY BE SOLD TO A MILL, STOCKPILED NEAR THE EMBANKMENT MATERIAL STOCKPILE LOCATION FOR FREE PUBLIC FIREWOOD, OR TAKEN ANYWHERE ELSE THE CONTRACTOR CAN LEGALLY DISPOSE OF THEM.
3. SLASH IS TO BE PILED ALONG THE ACCESS ROAD SO IT CAN BE USED TO COVER THE ROAD WHEN IT IS DECOMMISSIONED.

REVISION:

DATE:	BY:	DESC:

DRAWN BY: JBU
DESIGNED BY: JDE
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: MSP NAD83
DATUM: NAVD88
UNITS: INT. FEET
SOURCE: PIONEER

SCALE IN FEET
0 200 400

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK FISH BARRIER SITE ACCESS PLAN

PIONEER TECHNICAL SERVICES, INC.
106 PRONGHORN TRAIL, SUITE A
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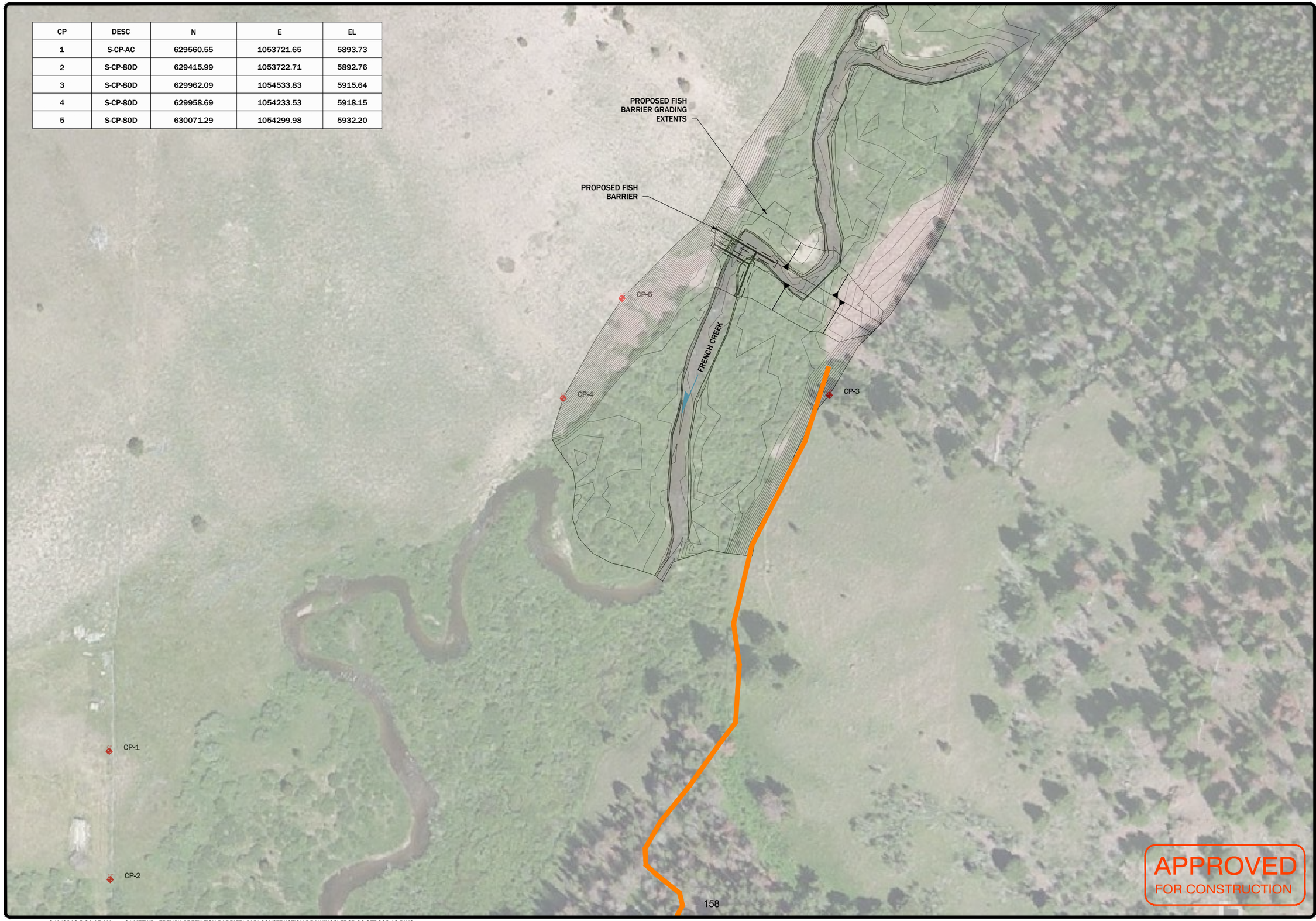
(406) 388-8578

SHEET 3

8/1/2018 8:41:24 AM G:\MTFWP_FRENCH CREEK FISH BARRIER\CAD\CONSTRUCTION DRAWINGS\FBCR CO SET 003 18.DWG

CP	DESC	N	E	EL
1	S-CP-AC	629560.55	1053721.65	5893.73
2	S-CP-80D	629415.99	1053722.71	5892.76
3	S-CP-80D	629962.09	1054533.83	5915.64
4	S-CP-80D	629958.69	1054233.53	5918.15
5	S-CP-80D	630071.29	1054299.98	5932.20



REVISION:

DATE:	BY:	DESC:

DRAWN BY: JJJ
DESIGNED BY: JDE
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: MSP NAD83
DATUM: NAVD88
UNITS: INT. FEET
SOURCE: PIONEER

SCALE IN FEET
0 50 100

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
FISH BARRIER
SITE PLAN

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106 PRONGHORN TRAIL, SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8578

SHEET
4

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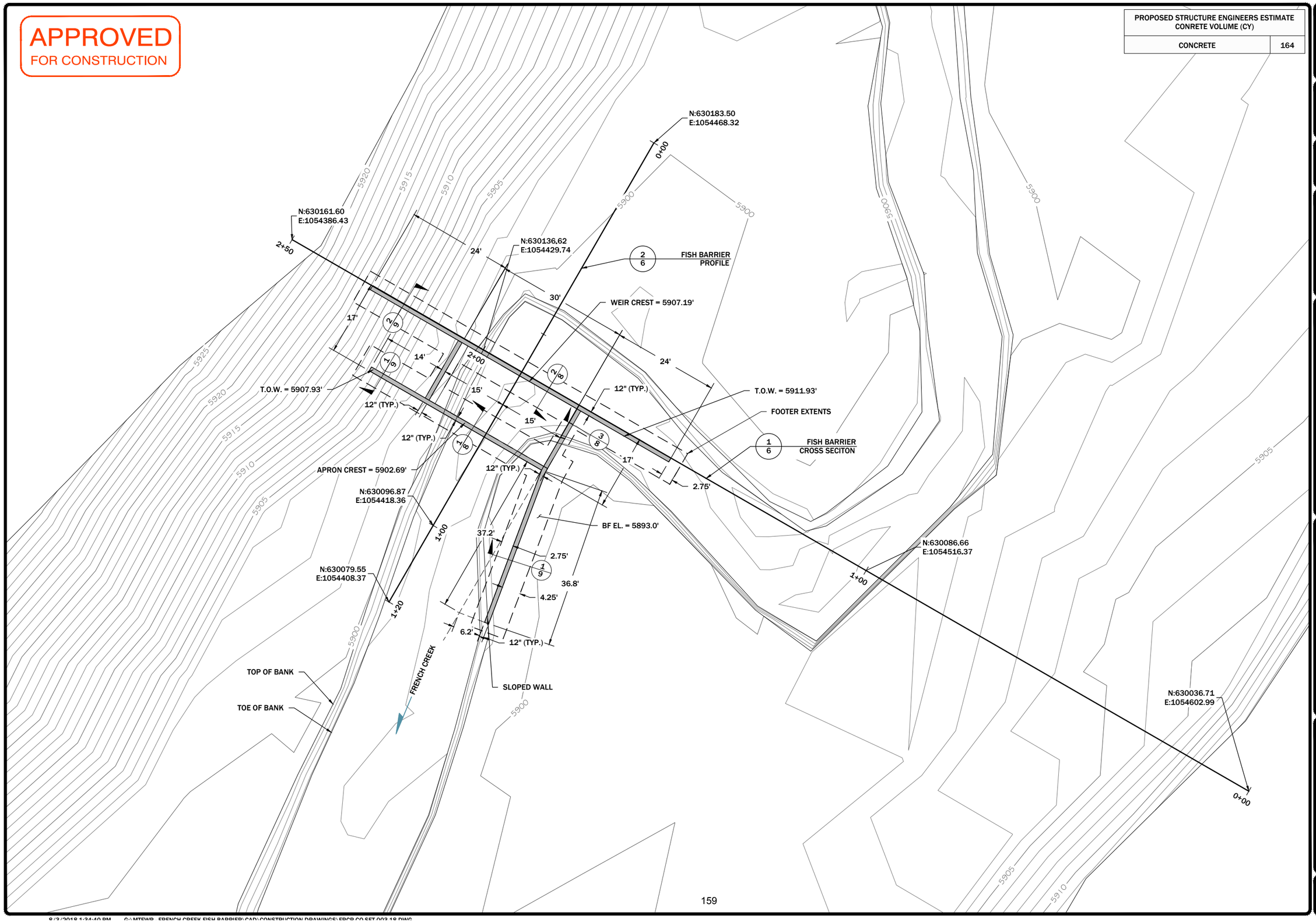
PROPOSED STRUCTURE ENGINEERS ESTIMATE CONRETE VOLUME (CY)	
CONCRETE	164



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PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: MSP NAD83
DATUM: NAVD88
UNITS: INT. FEET
SOURCE: PIONEER

N

SCALE IN FEET
0 10 20

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
FISH BARRIER
STRUCTURE PLAN

PIONEER
TECHNICAL SERVICES, INC.
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SHEET
5

8/3/2018 1:34:40 PM G:\MTFWP_FRENCH CREEK FISH BARRIER\CAD\CONSTRUCTION DRAWINGS\FBCR CO SET 003 18.DWG

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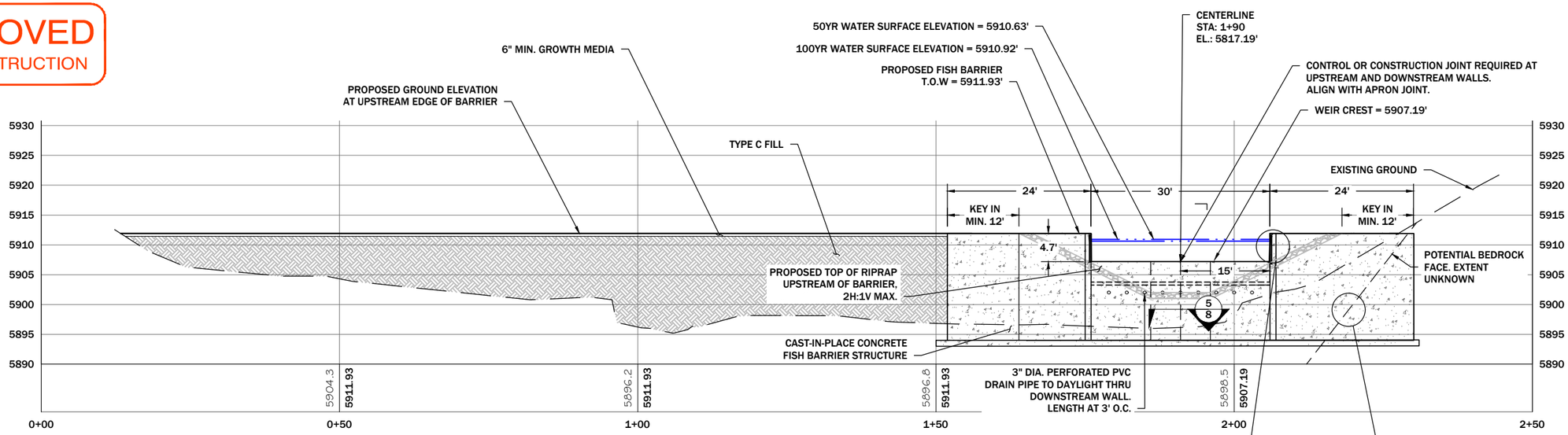
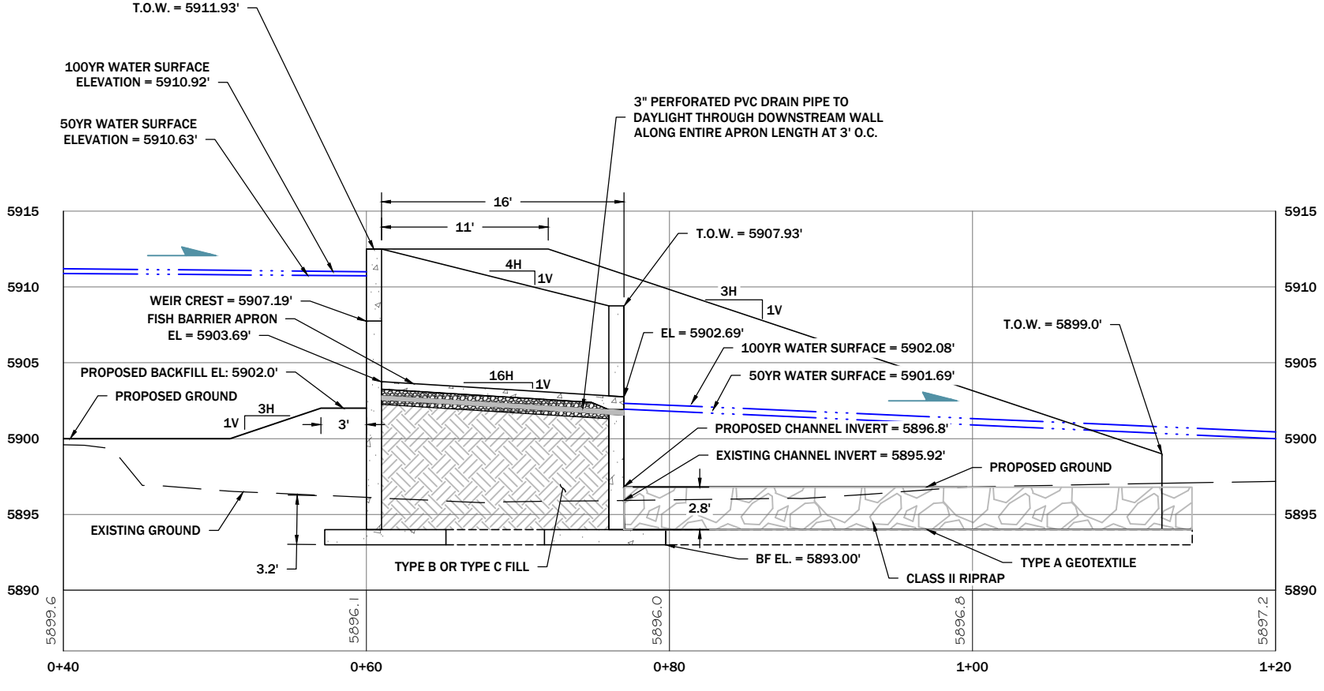
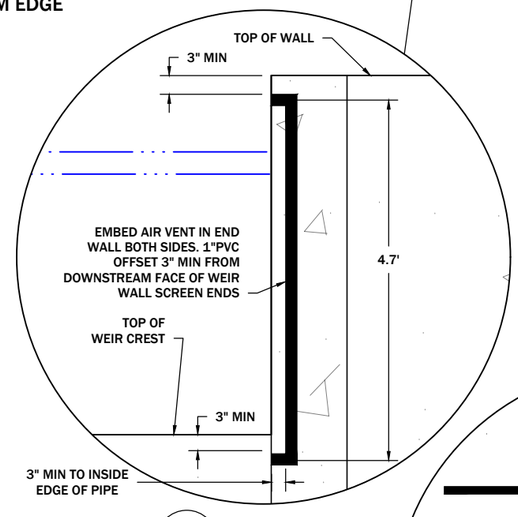


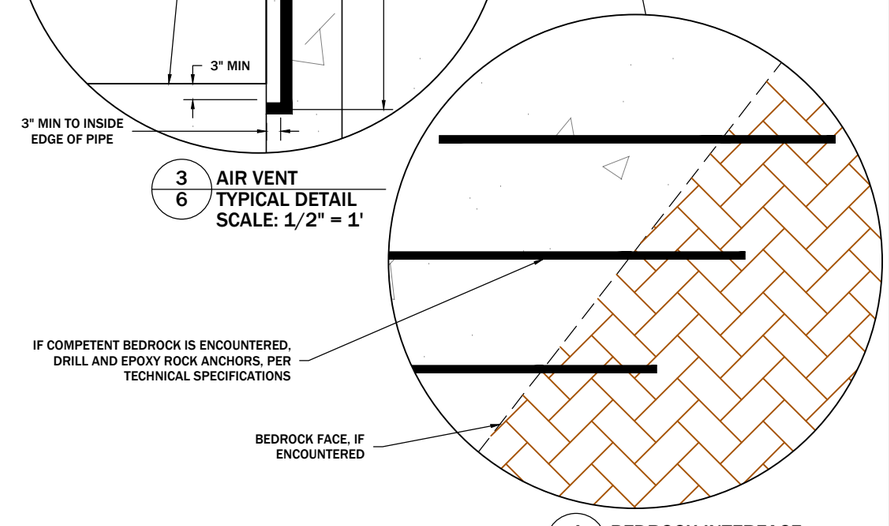
1/5 FISH BARRIER AT UPSTREAM EDGE SECTION
SCALE: 1"=10'



2/5 FISH BARRIER AT CENTERLINE PROFILE
SCALE: 1"=10'



3/6 AIR VENT TYPICAL DETAIL
SCALE: 1/2" = 1'



4/6 BEDROCK INTERFACE TYPICAL DETAIL
SCALE: 1/2" = 1'

REVISION:
DATE: BY: DESC:

DRAWN BY: JJJ
DESIGNED BY: JDE
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: NA
DATUM: NA
UNITS: FEET
SOURCE: PIONEER

SCALE IN FEET
0 VARIES

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
FISH BARRIER
CROSS SECTION
AND PROFILE

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106 PRONGHORN TRAIL, SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8578

SHEET
6

8/1/2018 8:51:30 AM G:\MTFWP_FRENCH CREEK FISH BARRIER\CAD\CONSTRUCTION DRAWINGS\FBDR CO SET 003 18.DWG

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PROPOSED SITE QUANTITIES ENGINEERS ESTIMATE IN BANK VOLUMES[1]			
	CUT (CY)	FILL (CY)	NET (CY)
TYPE C COMPACTED EMBANKMENT FILL [2]	42	2809	-2767
A HORIZON [3]	384	214	170
CLASS I RIPRAP		34	-34
CLASS II RIPRAP		494	-494
CLASS III RIPRAP		107	-107
CONCRETE		164	-164

NOTES:
1. QUANTITIES ARE ENGINEER ESTIMATES. CONTRACTOR IS RESPONSIBLE FOR ESTIMATING BID ITEM QUANTITIES. ACTUAL QUANTITIES MAY VARY FROM THESE ESTIMATED QUANTITIES DEPENDING ON SITE CONDITIONS ENCOUNTERED AT THE TIME THE WORK IS PERFORMED.
2. INCLUDES STRUCTURAL FILL PLACED AROUND FISH BARRIER AND USED TO CONSTRUCT BERM. ESTIMATED RELATIVE TO EXISTING GROUND.
3. PLACE MINIMUM 6 INCHES OF A HORIZON (GROWTH MEDIA) ON STRUCTURAL EMBANKMENT AND ANY DISTURBED AREAS THAT WILL NOT BE INUNDATED.

COMPACTED TYPE C FILL
CLASS I RIPRAP,
N:630161.60
E:1054386.43
2+50
4.0' MIN
N:630136.62
E:1054429.74
PROPOSED RIGHT BANK BERM
ELEVATION = 5911.93,
SEE DETAIL 1/10
18.2'
28.2'
4.0' MIN
2:1 MAX
25.1'
2+00
2:1 MAX
RIPRAP TYPICAL SECTION 2/10
1.5:1 MAX
44'
3:1 MAX
COMPACTED TYPE C FILL
8.0
INSTALL CLASS III RIPRAP
DOWNSTREAM OF APRON
20' MIN. TO EXTENTS SHOWN
SEE DETAIL 2/10
45.9'
N:630086.66
E:1054516.37
3:1 MAX
3:1 MAX
1+00
19.2'
PROPOSED LEFT BANK BERM
ELEVATION = 5911.93,
SEE DETAIL 1/10
EXTEND RIPRAP
LENGTH OF FOOTER
3'
40.7'
3:1 MAX
N:630036.71
E:1054602.99
TOP OF BANK
TOE OF BANK
FRENCH CREEK
160.9'
33.9'
0+00
EXTEND RIPRAP AND
GEOTEXTILE 10' PAST TYPE C
FILL INTERFACE WITH
EXISTING GROUND
5920
5915
5910
5905
5900
5925

REVISION:

DATE:	BY:	DESC:

DRAWN BY: JJJ
DESIGNED BY: JDE
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: MSP NAD83
DATUM: NAD88
UNITS: INT. FEET
SOURCE: PIONEER

N
SCALE IN FEET
0 10 20

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
FISH BARRIER
BACKFILL PLAN

PIONEER
TECHNICAL SERVICES, INC.
106 PRONGHORN TRAIL, SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8578

SHEET
7

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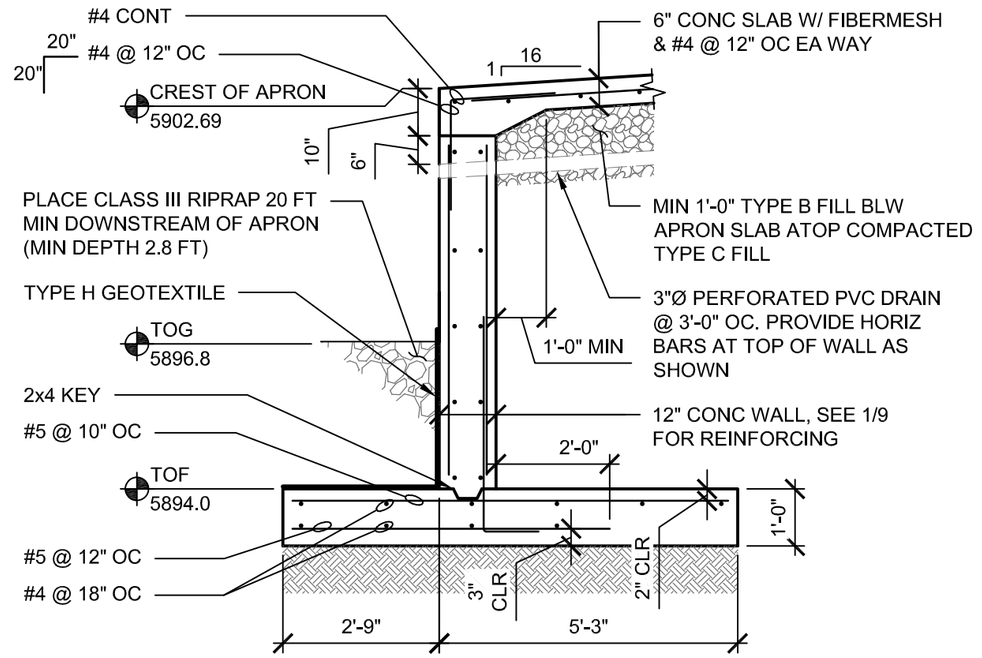
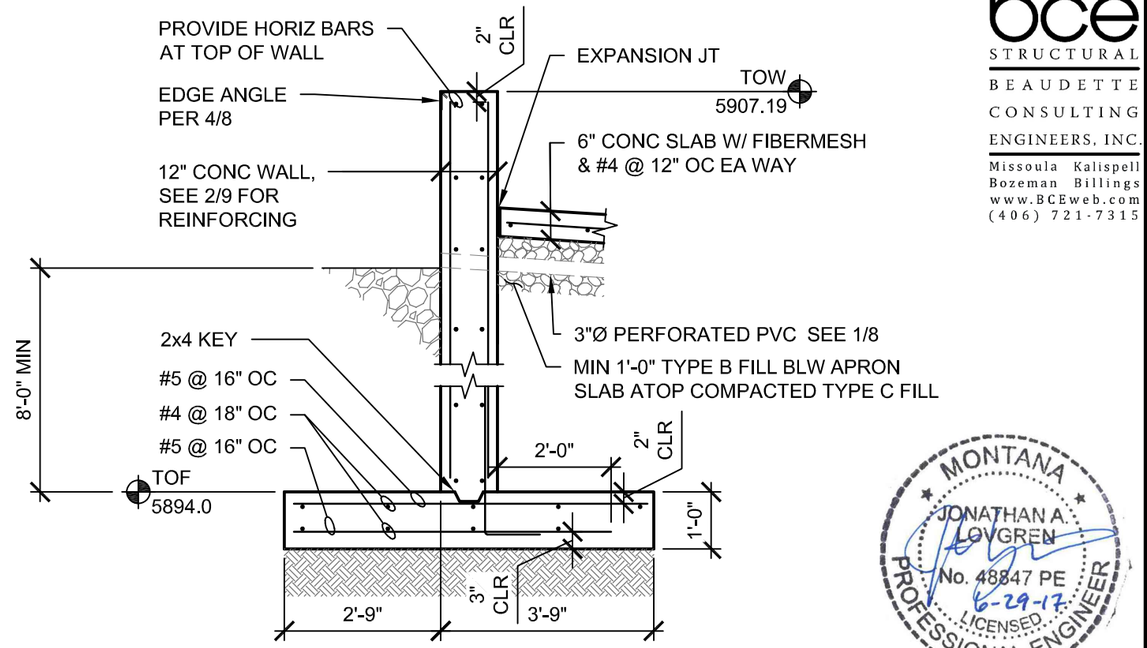


1 DOWNSTREAM WEIR WALL

SCALE: ⅜"=1'-0"

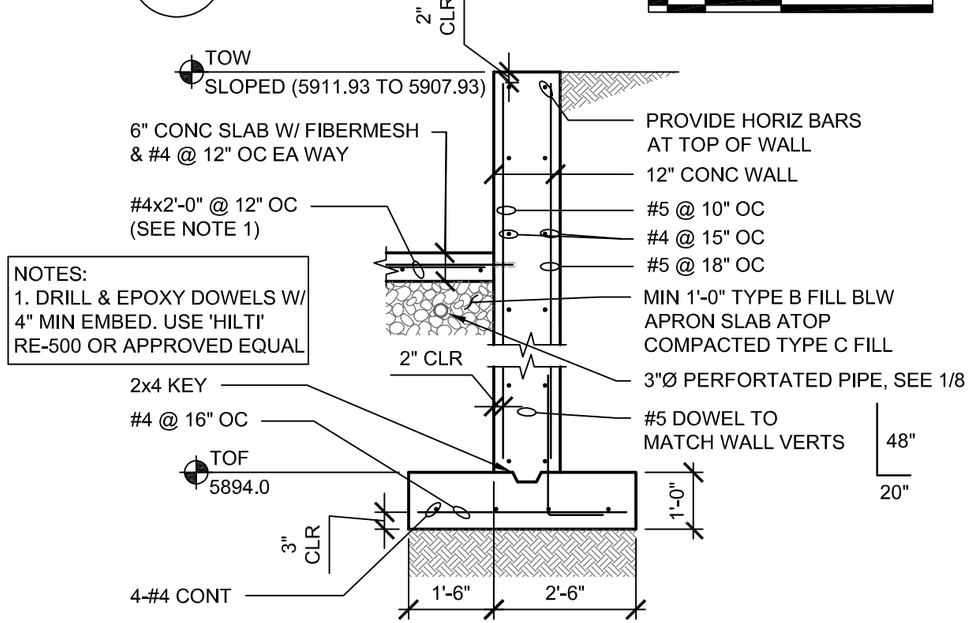
0' 1' 5'



2 UPSTREAM WEIR WALL

SCALE: ⅜"=1'-0"

0' 1' 5'

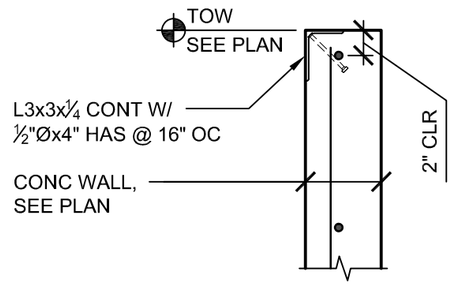


3 APRON SIDE WALL

SCALE: ⅜"=1'-0"

0' 1' 5'

NOTES:
1. STEEL ANGLE MATERIAL SHALL CONFORM TO ASTM A36, Fy = 36 ksi
2. HEADED ANCHOR STUD MATERIAL SHALL CONFORM TO ASTM A108, GRADE 1015, Fu = 65 ksi



4 GUARD ANGLE @ TOW

SCALE: NTS

APPROVED
FOR CONSTRUCTION

bce STRUCTURAL
BEAUDETTE CONSULTING ENGINEERS, INC.
Missoula Kalispell Bozeman Billings
www.BCEweb.com
(406) 721-7315

REVISION:
DATE: BY: DESC:

DRAWN BY:
DESIGNED BY: JAL
CHECKED BY: JAL
APPROVED BY: JAL
PROJECT NO: 17151-0010
DATE: 6/28/17

DISPLAYED AS:
COORD SYS/ZONE: NA
DATUM: NA
UNITS: FEET
SOURCE: BCE

SCALE IN FEET
0 NTS

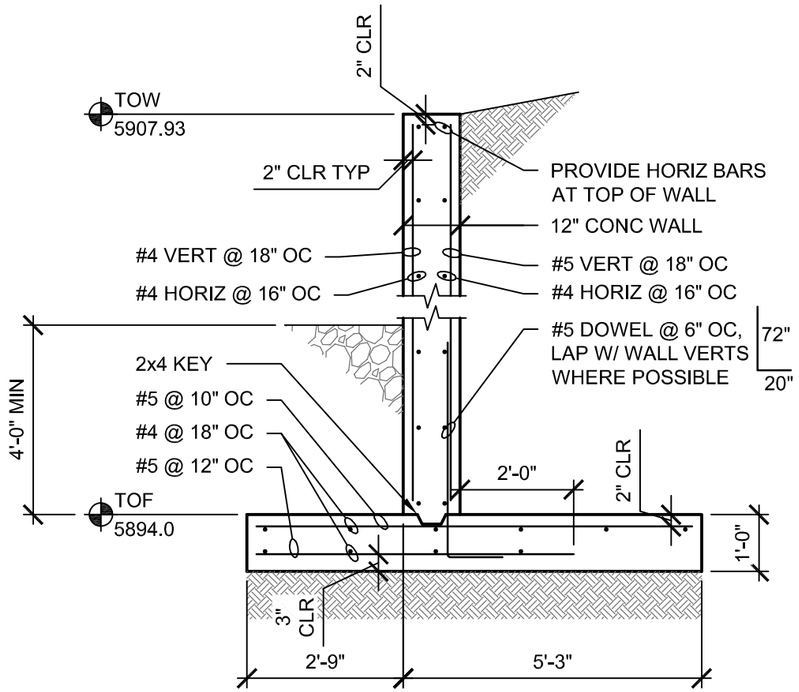
MONTANA
JONATHAN A. LOVGREN
No. 48847 PE
6-29-17
LICENSED
PROFESSIONAL ENGINEER

MTFWP
FRENCH CREEK
FISH BARRIER

FRENCH CREEK
FISH BARRIER
STRUCTURAL
DETAILS

PIONEER TECHNICAL SERVICES, INC.
106 PRONGHORN TRAIL SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8579

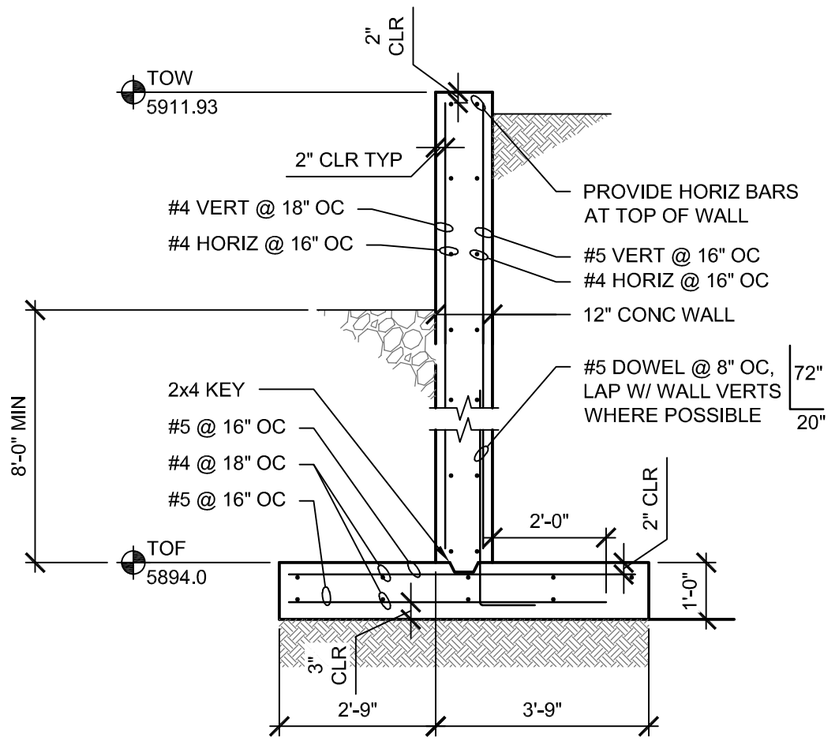
SHEET
8



1 CONC WING WALL @ DOWNSTREAM

SCALE: FULL

0" 1/2" 1" 2"



2 CONC WING WALL @ UPSTREAM

SCALE: FULL

0" 1/2" 1" 2"

REBAR LAP LEGEND	
BAR DIAMETER	LAP (INCHES)
#3	18"
#4	24"
#5	30"

ADDITIONAL REMARKS:

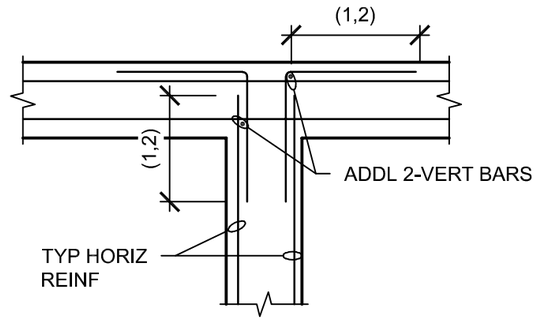
1. 4500 PSI CONCRETE CLASS 'B' LAP

3 REBAR LAP LEGEND

SCALE: NTS

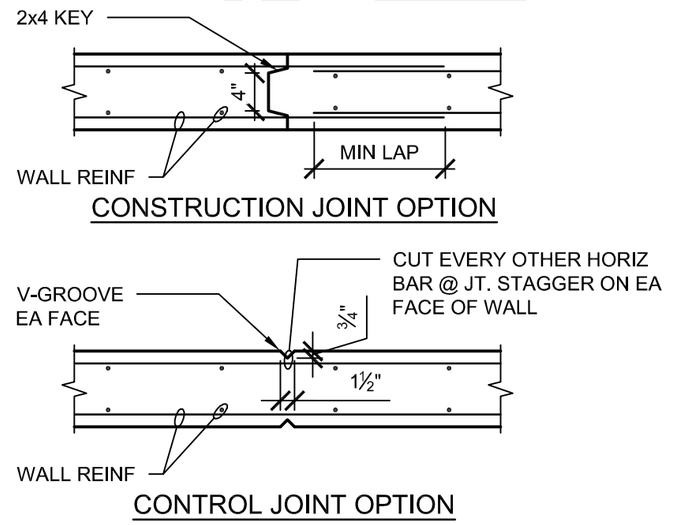
NOTE:

1. INDICATES MIN REBAR LAP LENGTH, SEE DETAIL 3/9
2. REBAR SAME SIZE AND SPACING AS HORIZONTAL BARS



4 TYP WALL REINF

SCALE: NTS



5 TYP WALL CONTROL JT

SCALE: NTS

APPROVED
FOR CONSTRUCTION

bce STRUCTURAL
BEAUDETTE CONSULTING ENGINEERS, INC.
Missoula Kalispell
Bozeman Billings
www.BCEweb.com
(406) 721-7315

REVISION:

DATE:	BY:	DESC:

DRAWN BY:
DESIGNED BY: JAL
CHECKED BY: JAL
APPROVED BY: JAL
PROJECT NO: 17151-0010
DATE: 6/28/17

DISPLAYED AS:
COORD SYS/ZONE: NA
DATUM: NA
UNITS: FEET
SOURCE: BCE

SCALE IN FEET
0 NTS

MONTANA
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No. 48847 PE
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106 PRONGHORN TRAIL SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8579

SHEET
9

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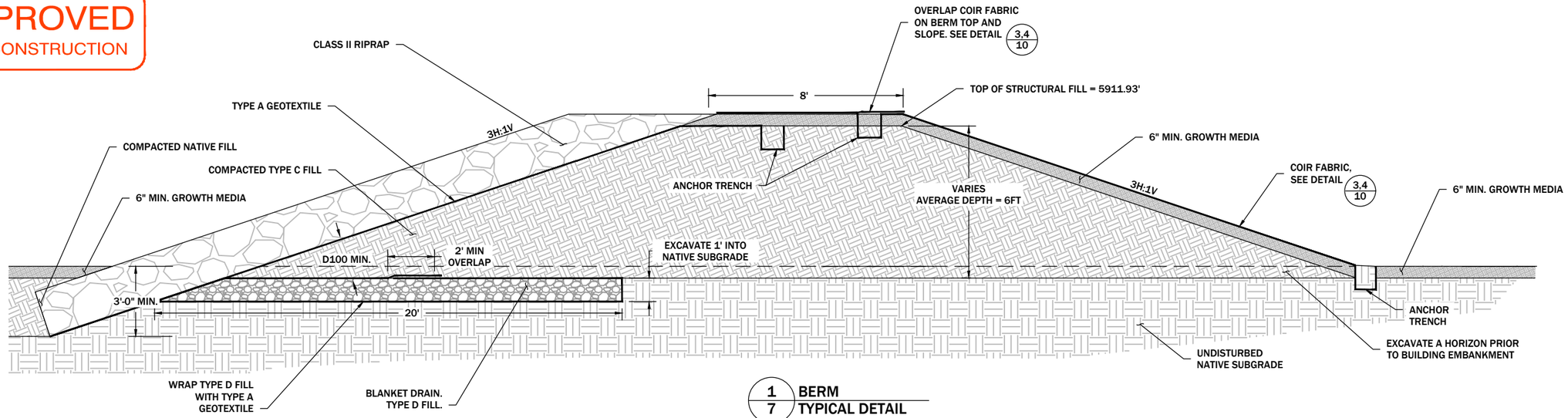
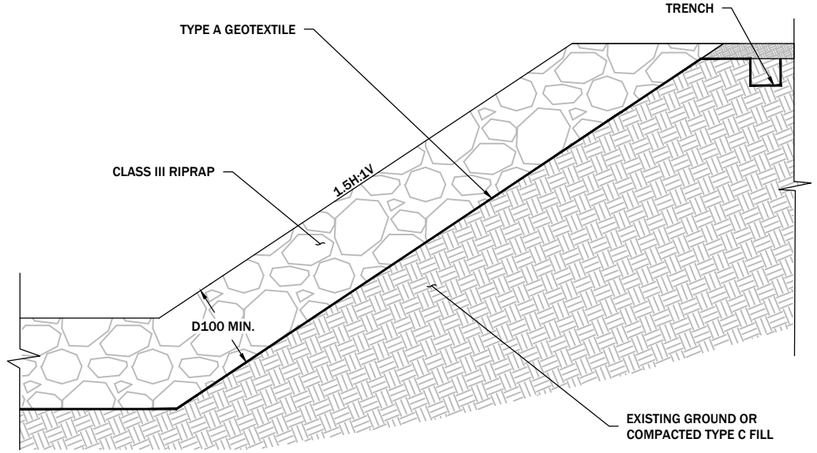
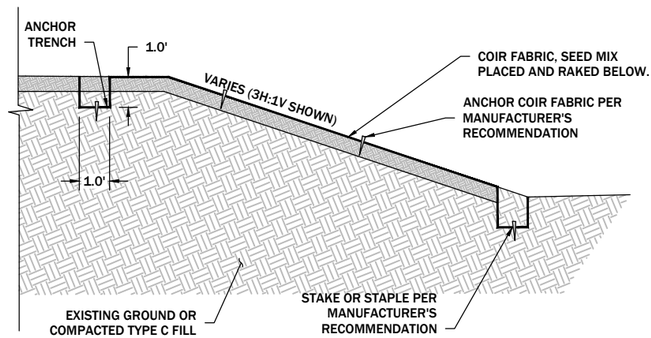


1/7 BERM TYPICAL DETAIL
SCALE: 1" = 5'



2/7 RIPRAP DETAIL TYPICAL DETAIL
SCALE: 1" = 5'

NOTES:
1. RIPRAP KEY IN OF 3' IS REQUIRED WHERE RIPRAP DOES NOT CONTINUE ON FLAT SLOPE AS SHOWN.



3/10 COIR FABRIC TYPICAL DETAIL
SCALE: 1" = 5'

NOTES:
1. ALL DISTURBED STREAM BANKS SHALL BE DRESSED WITH COVER SOIL SEEDED AND PROTECTED WITH COIR FABRIC.

REVISION:
DATE: BY: DESC:

DRAWN BY: JJJ
DESIGNED BY: JDE
CHECKED BY: JDE
APPROVED BY: GEA
PROJECT NO:
DATE: 08/01/18

DISPLAYED AS:
COORD SYS/ZONE: NA
DATUM: NA
UNITS: FEET
SOURCE: PIONEER

SCALE IN FEET
0 VARIES

MTFWP
FRENCH CREEK FISH BARRIER

FRENCH CREEK FISH BARRIER BACKFILL DETAILS

PIONEER TECHNICAL SERVICES, INC.
106 PRONGHORN TRAIL, SUITE A
BOZEMAN, MONTANA 59718
(406) 388-8578

SHEET 10

8/1/2018 10:46:40 AM G:\MTFWP - FRENCH CREEK FISH BARRIER\CAD\CONSTRUCTION DRAWINGS\FRCR-CO-SET-003-18.DWG